

Space-Qualifiable Cyanate Ester Elastomer, Phase II

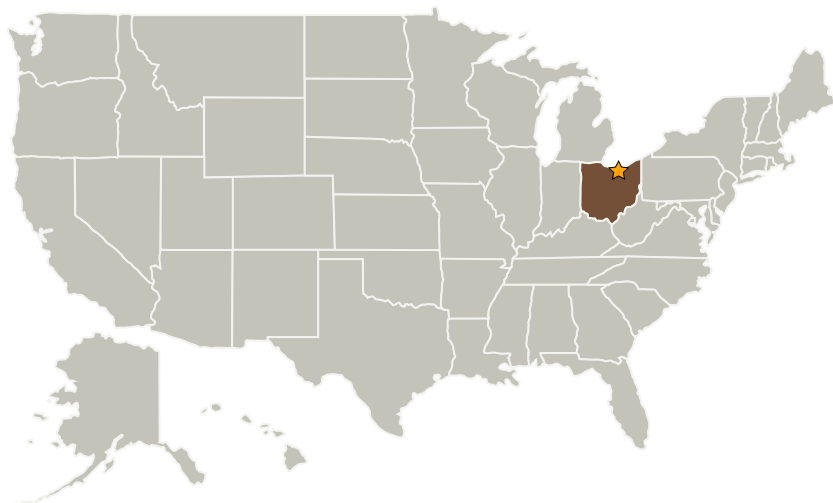
Completed Technology Project (2007 - 2009)



Project Introduction

In Phase 1, CRG demonstrated the feasibility of a novel approach to prepare cyanate ester based elastomers. This approach polymerizes in-situ siloxane within a reactive elastomer precursor matrix in order to achieve an elastomeric material with highly tunable and desired mechanical properties. This methodology shows great potential in materials development for applications such as space deployable structures, space seals, and aeroshells. Using this methodology CRG was able to show that elastomeric cyanate ester materials having a very broad range of thermal and mechanical properties could be formulated using a relatively small amount of CRG's synthesized monomers and other low-cost, commercially available components, such as low-cost, low molecular weight silicone materials. The cyanate ester elastomer materials exhibited excellent thermal stability, maintaining their elastomeric properties to temperatures below -100 C and as high as 300 C. The proposed Phase 2 effort will leverage Phase 1 results and CRG's other extensive R&D in elastomeric material technologies to bring the methodology to readiness for transition to operational use.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Cornerstone Research Group, Inc.	Supporting Organization	Industry	Miamisburg, Ohio

Primary U.S. Work Locations

Ohio

Project Transitions

**November 2007:** Project Start**November 2009:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.3 Thermal Protection Components and Systems
 - └ TX14.3.1 Thermal Protection Materials